SUMITOMO
CARBIDE - CBN - DIAMOND

Tooling Solutions for EV Traction Systems

Tools for machining EV traction system components

P M K N S H

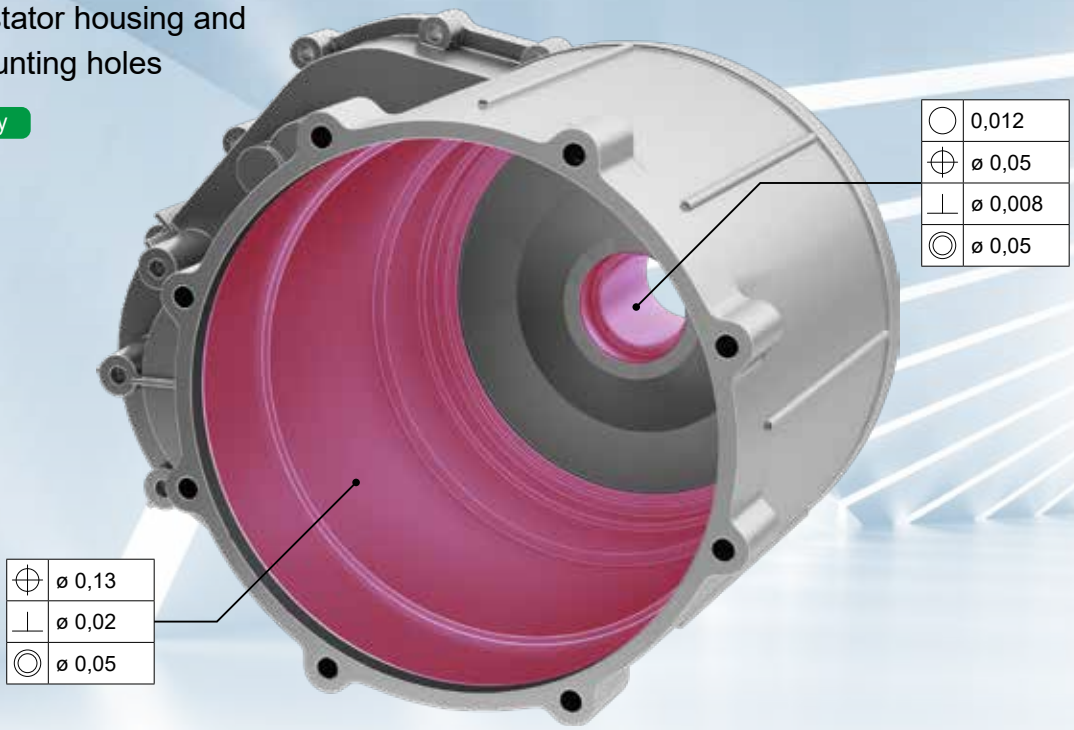
SUMITOMO ELECTRIC GROUP

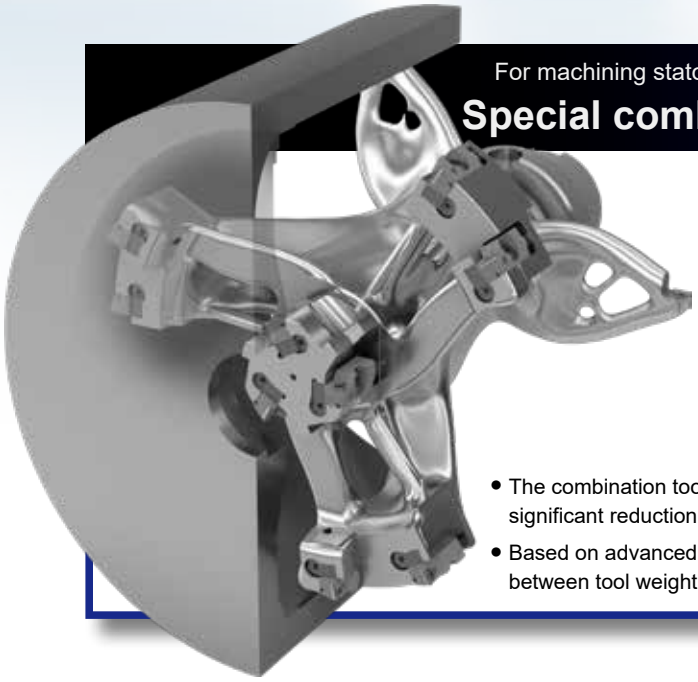
Electric motor housing

N

Machining stator housing and bearing mounting holes

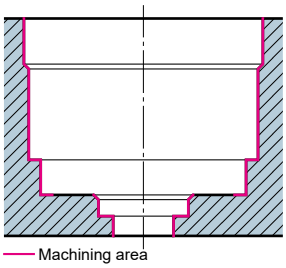
Aluminum Alloy

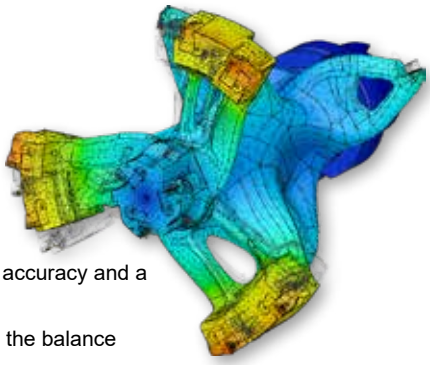




For machining stator housing/bearing mounting holes

Special combination boring tools





- The combination tools provides excellent machining accuracy and a significant reduction in cycle time.
- Based on advanced stress analysis and actual data, the balance between tool weight and rigidity is optimised.

Drilling

Drilling of mounting holes

■ MultiDrill

MDA series

Diameter: Ø 1,0–12,0 mm
L/D: Ø 3,0 mm ≤: 3, 5, 10, 15, 20
Ø 3,1 mm >: 3, 5, 10

Milling

Surface milling

■ ALNEX

ANX series

Diameter: Ø 25–160 mm

Endmilling

■ WaveMill

WEZ series

Diameter: Ø 14–160 mm

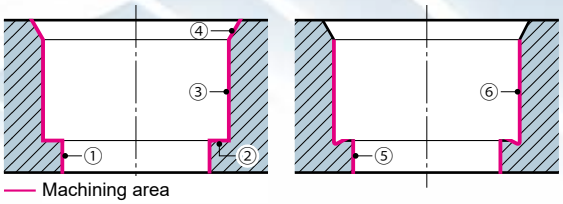
Reducer case

N

Bearing mounting pre-cast hole drilling

Aluminum Alloy

Conventional machining process



Machining area

① ID (small diameter)	Roughing
② Bottom surface	
③ ID (large diameter)	
④ Entrance chamfering	
⑤ ID (small diameter)	Finishing
⑥ ID (large diameter) + necking	

○	0,012
⌖	ø 0,05
⊥	ø 0,008
◎	ø 0,05

Conventionally: different tools for roughing and finishing required

1-Pass roughing and finishing tool

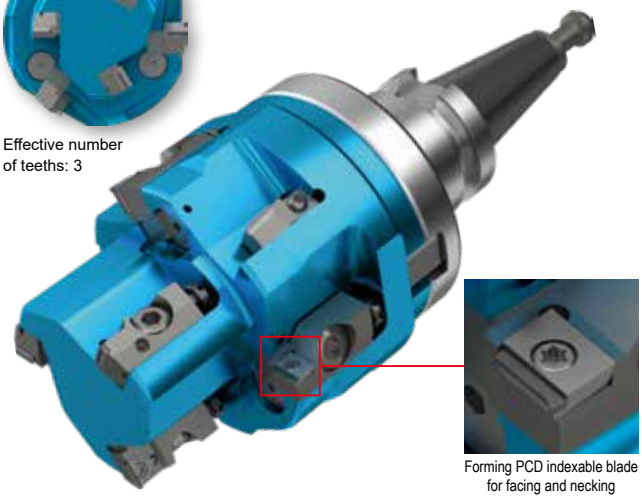
Drilling process

①⑤	ID (small diameter) roughing/finishing
②	Bottom surface
③⑥	ID (large diameter) roughing/finishing + necking
④	Entrance chamfering

Capable of machining in 1 pass!
Reduced number of tools
Contributes to reduced cycle time

Cartridge type

Effective number of teeths: 3



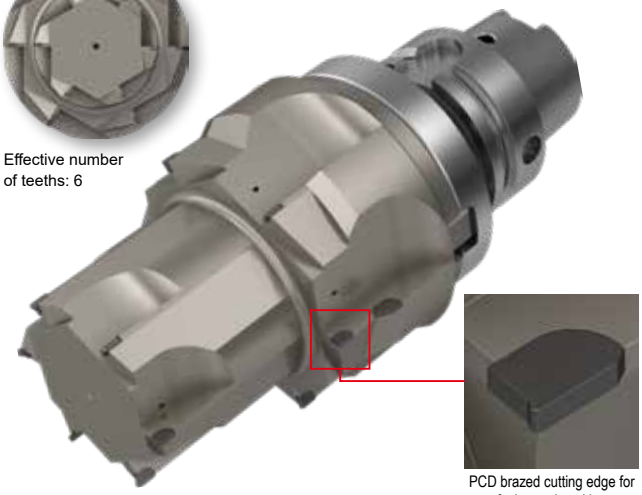
Forming PCD indexable blade for facing and necking

- The use of three formed inserts enables one-pass finishing even on pre-cast hole work with large variations in machining allowance.
- The introduction of a parallel adjustment mechanism maintains high squareness accuracy even when diameter height is adjusted.
- Utilising an aluminum alloy body enables usage on small M/C with weight limitations.

Brazed type

A.L.M.T.

Effective number of teeths: 6



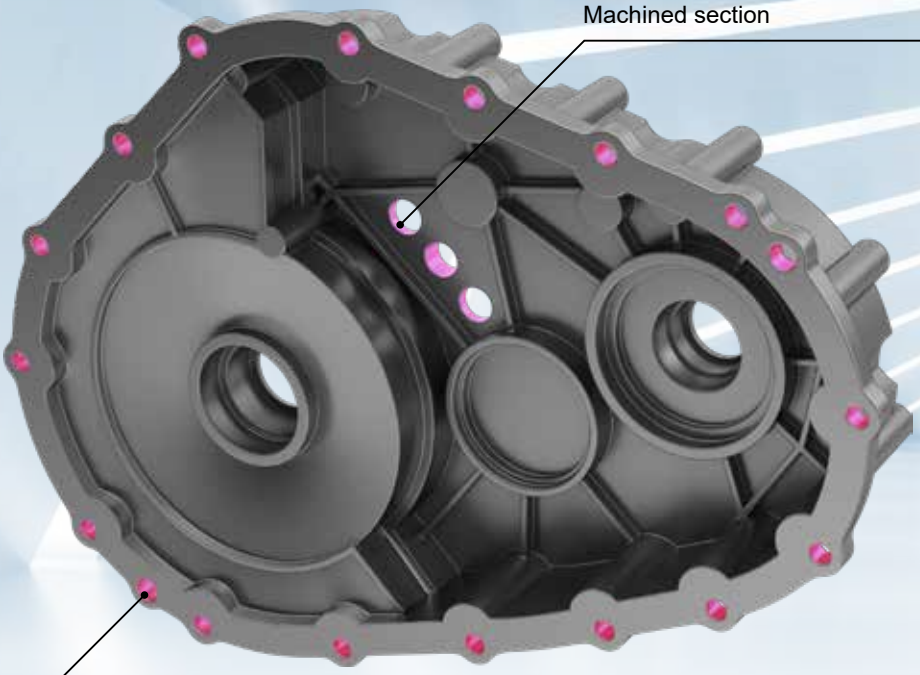
PCD brazed cutting edge for facing and necking

By brazing the PCD cutting edges directly to the body, the number of effective cutting edges can be increased (from 3 to 6), achieving even higher machining efficiency.

Reducer case Pre-cast hole drilling

N

Aluminum Alloy



For pre-cast hole drilling
DLC-coated drill

Diameter: Ø 5,0–12,0 mm (large dia. max. Ø 16,0 mm and below)

Feed rate f = 1,0 mm/rev
Less than Ø 0,4 positional accuracy is possible.

The special groove design ensures high machining accuracy and high efficiency, even when machining cast holes, where the hole position can easily be misaligned.

High machining accuracy and high efficiency.

Regrindable
PCD reamer with chip breaking function

A.L.M.T.

Diameter: Ø 5,0–80,0 mm

Special chip breaker shape improves chip breaking.

It is possible to regenerate a new chipbreaker upon regrinding.

Applicable feed rate range f = 0,2–0,4 mm/rev (4 flutes).

Rotor shaft and gear

P H

Special Steel | Hardened alloy steels

For highly efficient machining of hardened steel

Hard skiving tool

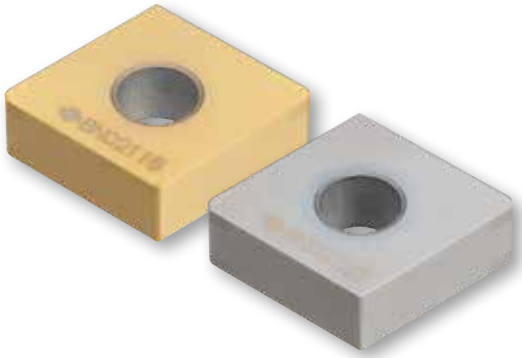
Machining efficiency 10 times higher than with conventional machining methods
Surface roughness of Rz 2 µm or less is possible.

Our proprietary machining method achieves both machining accuracy and high efficiency while significantly reducing cycle time.

Meets the strict machining accuracy required for high-speed rotating for EV rotor shafts.

Hardened steel turning

Coated Sumiboron BNC2115/BNC2125



Turning

Pre-hardening turning

■ Coated grades for steel turning

AC8000P series

AC8015P
AC8020P
AC8025P
AC8035P

Drilling

Small-diameter hole machining

■ Multidrills

NeXEO MDE type

Diameter: Ø 1,0–20,0 mm
L/D: 2, 3, 4, 5, 8

Cavity machining

■ Multidrill

SMD series

Diameter: Ø ≥12,0 mm
L/D: 3, 5, 8

SumiDrill

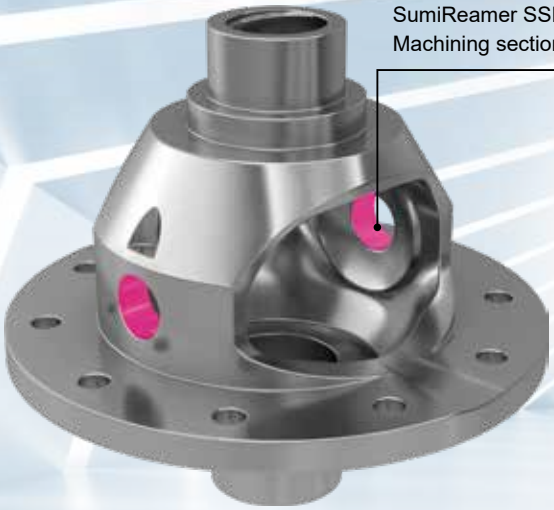
WDX series

Diameter: Ø 13,0–68,0 mm
L/D: 2, 3, 4, 5

Differential case

K

Ductile cast iron



Drills for high-efficiency machining
Machining section

For machining ring gear mounting holes

High-efficiency drills

Diameter: Ø 3,0 - 14,0 mm

Doubled feed rate compared to conventional drills.
f = 0,4–0,5 mm/rev is possible

The special low-resistance cutting edge enables highly efficient machining. Higher efficiency reduces power consumption by about 40%, contributing to energy saving towards the SDGs.

SumiReamer SSR type

Diameter: Ø 2,97–12,0 mm

◯	1,8 µm
⌭	2,3 µm
	Ra 0,1

Well-balanced design that combines sharpness and cutting edge strength. Achieves highly efficient machining with a feed rate of f = 1,6 mm/rev.

Turning

Roughing

■ Grades for cast iron turning

AC4000K series

AC4010K
AC4015K
AC420K

Finishing

■ For ductile cast iron turning

Coated Sumiboron BNC500

Reaming

Internal diameter finishing

■ SumiReamer

SR series

Diameter: Ø 11,9–140,6 mm

Spherical cutters

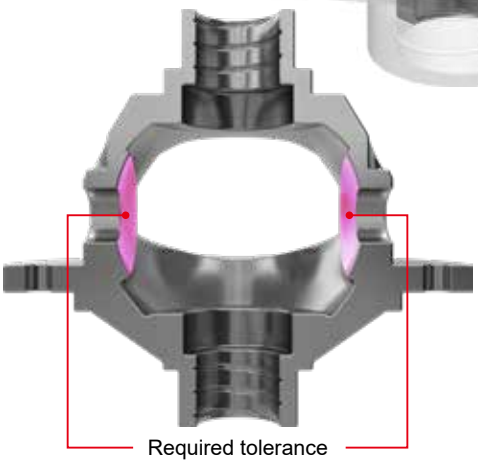
Supported sizes: on request (available sizes: Ø 35–64 mm)

Flat insert type

Suitable for machining of small differential cases.

Tangential insert type

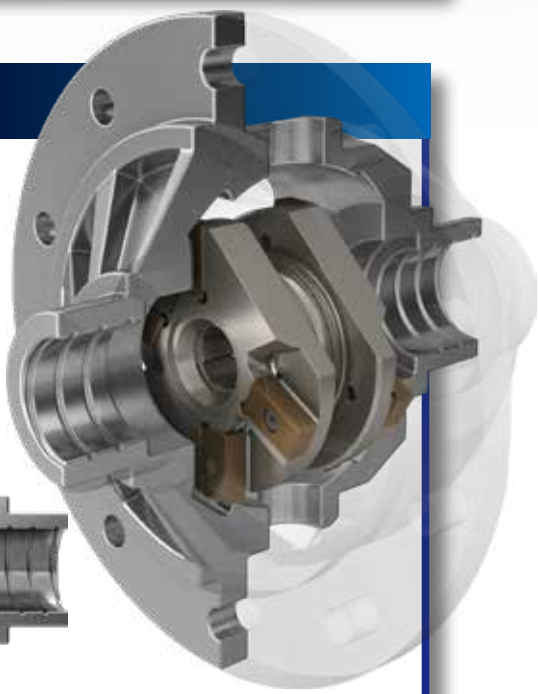
Tangential mounting increases insert rigidity, ideal for high-feed and high-efficiency machining.

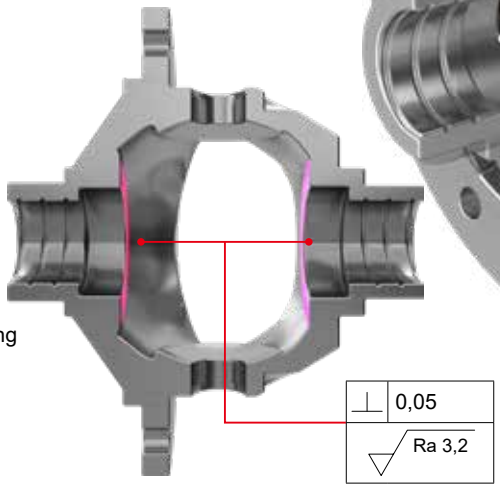


Required tolerance range for spherical surface is 90 µm or below

Face cutter

Supported sizes: on request (available sizes: Ø 48–100 mm)





Special cutter for dedicated machines achieves outstanding mass production performance.
High-precision cutter body and ground type insert support stringent machining accuracy.
Machining accuracy.
Excellent economic efficiency due to indexable inserts.

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